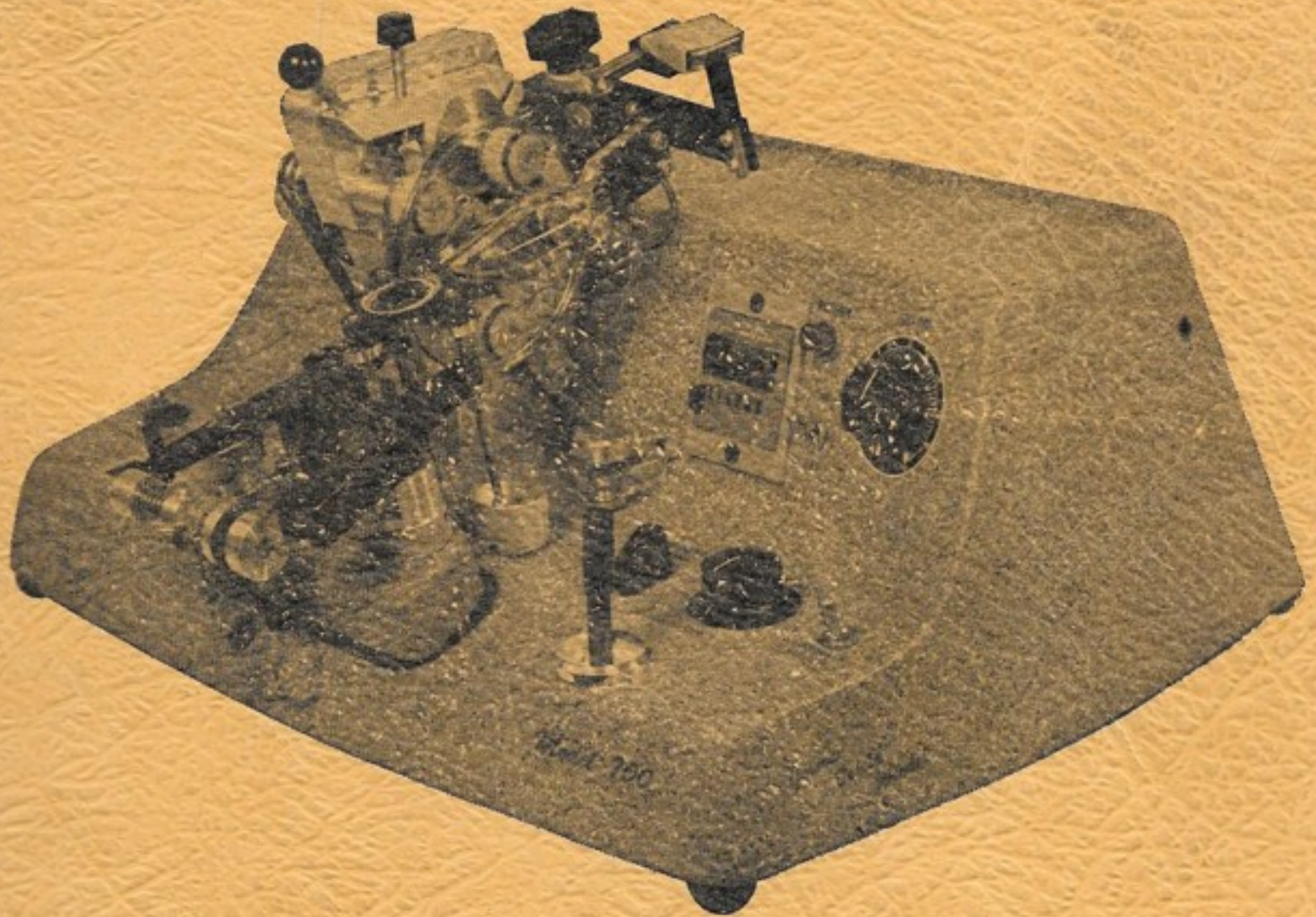




OPERATING INSTRUCTIONS

MODEL 700 TOROID WINDER



GORMAN
WIRE WINDING MACHINES

1645 SUPERIOR AVENUE COSTA MESA, CALIFORNIA 92627 714-646-4463

EASTERN FACTORY SALES & SERVICE

480 SOUTH MAIN STREET, RANDOLPH, MASSACHUSETTS 02368

617-963-7333

Introduction

You now own one of the most efficient and versatile toroid winding machines that superior engineering, design and workmanship can produce. You will find that this machine will perform faithfully and well for you on the most difficult coils you may choose to wind if you take the time to read this manual and understand the function of the different parts of the machine and its adjustments.

Toroidal coils are the most difficult of all coils to wind because of their many forms and frailties and constantly decreasing sizes, and the inevitable fact that for each turn of wire placed on a toroid, all of the wire which is to go on the toroid must pass through the center. This manual illustrates all of the adjustments possible on this machine and explains the reason for each. Refer continually to these illustrations until you are thoroughly familiar with them and you will have no difficulty operating this machine.

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GENERAL FUNCTIONS OF THE TOROID WINDER

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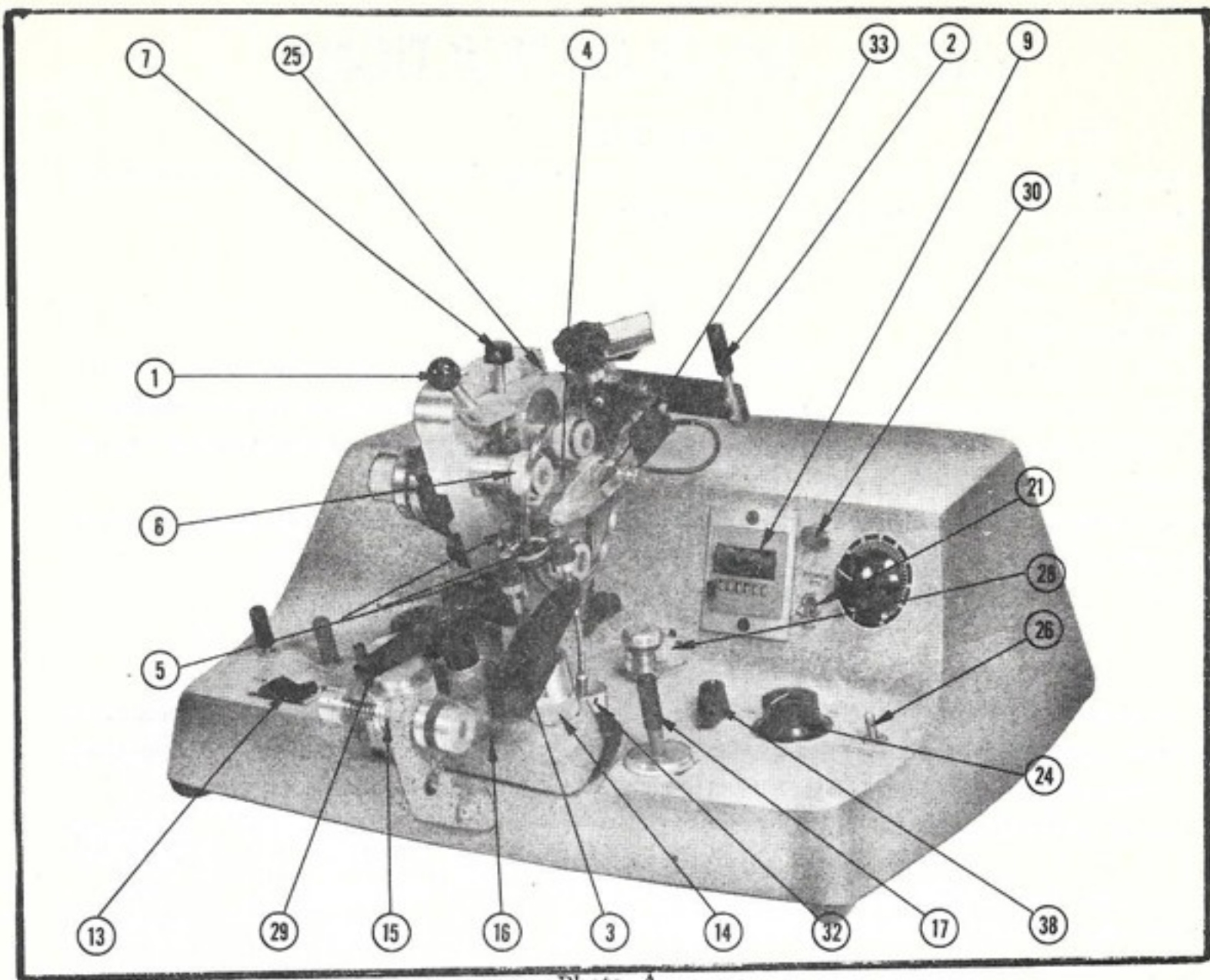


Photo A

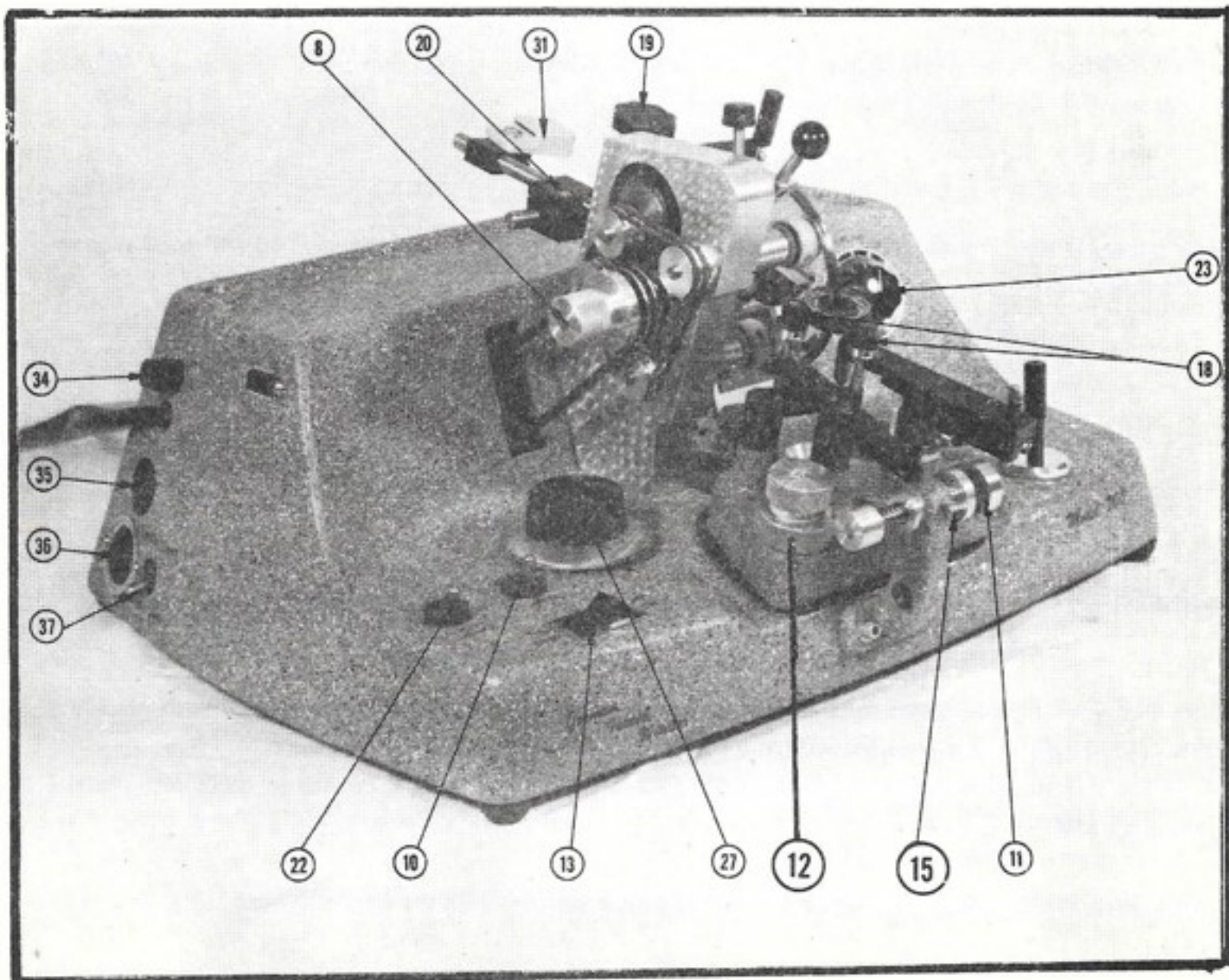


Photo B

GENERAL SET-UP INSTRUCTIONS

SHUTTLES

There are ten different shuttle sizes available for use with the Gorman FOUR INCH HEAD. Six of these are wire slider shuttles and four are side slider shuttles as follows:

Wire slider shuttle sizes

.055" .062" .075" .100" .115" .135"

Side slider shuttle sizes

3/16" 1/4" 5/16" 3/8" (These are all identified by a dovetail groove along the side.)

The shuttle size can be determined by measuring across the largest cross section dimension of the shuttle for the wire slider shuttle; and across the largest cross section dimension including the side slider itself on the side slider shuttles.

There are four different shuttle sizes available for use with the Gorman SIX INCH HEAD. These are all side slider shuttles as follows:

3/16" 1/4" 5/16" 3/8"

SHUTTLE ROLLERS

Rollers come in four different sets of four each. Each roller is reversible end-to-end on its shaft to accommodate different sizes of shuttles. Each set is numbered by dots on one end of the rollers. Wire slider shuttle rollers have two black and two white per set. The white rollers are larger and should go on the rear shafts.

Rollers for Wire Slider Shuttles:

	Unnumbered Ends Out	Numbered Ends Out
Set ONE, identified by one dot, for wire slider shuttles.	.055 & .062	.075
Set TWO, identified by two dots, for wire slider shuttles.	.100	.115 & .135

Side slider shuttle rollers have four white rollers per set and may be used with either four or six inch shuttles.

Rollers for Side Slider Shuttles:

Set FOUR, identified by four dots, for side slider shuttles.	3/16	1/4
Set FIVE, identified by five dots, for side slider shuttles.	5/16	3/8

WIRE SLIDERS

A general guide for wire sliders when using heavy Formvar magnet wire is as follows. You will need a micrometer to identify them.

.018" slider	#46 HF to #43 HF
.020" slider	#43 HF to #40 HF
.024" slider	#40 HF to #37 HF
.028" slider	#37 HF to #35 HF
.036" slider	#35 HF to #32 HF
.040" slider	#32 HF to #30 HF
.045" slider	#30 HF to #28 HF

When using Teflon, Litz, Bifilar or Trifilar wire use next size heavier slider than shown in table above.

SIDE & BACKING PLATES

There are two sizes of side plates for use with wire slider shuttles numbered on the back of each plate. All side plates and backing plates are used with the FOUR INCH HEAD.

Plate # 1A is for small cores used with shuttles .055, .062, and .075. Plate # 2A is for larger cores with shuttles .100, .115, and .135.

The backing plate (#39 photo Q) is used for all 4" side slider shuttles with the four inch head.

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INSTRUCTIONS FOR OPERATION USING WIRE SLIDER SHUTTLES

Place core to be wound on shuttle and hold core in right hand with shuttle joint on top. Tapered side of shuttle joint must point away from operator. The .055" shuttle is the only exception to this rule. Lift lever (#1 Photo C) on top of head. This moves the two rear nylon rollers inwards to allow shuttle to be placed on rollers. Push lever (#2 Photo C) all the way back until it contacts magnet which holds lever. Pull lever (#3 Photo C) all the way back along slider toward operator which permits core to be placed in position easily.

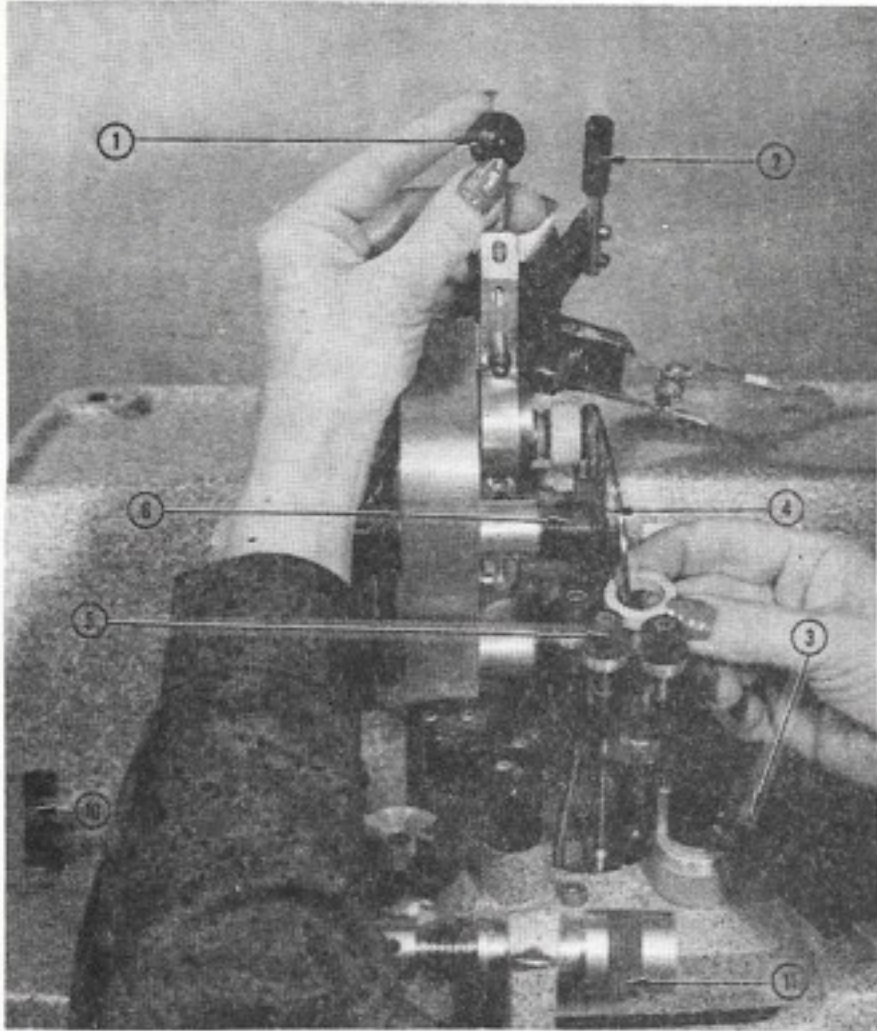


Photo C

Place further side of shuttle around back side of plate (#4 Photo C) and then position core against left two core rotators (#5 Photo C).

Grasp shuttle just above front top shuttle roller (#6 Photo C) with left hand, and with shuttle, press the core against the left two core rotators (#5 Photo C) while you push lever (#3 Photo C) forward along slide and core is held securely between the three core rotators. If necessary, push lever #3 of core rotator slightly to right while moving it forward into position.

Now tap the shuttle which is still loose on its four drive rollers over to the right until it is lying up against the side plate (#4 Photo C) and pull lever (#1 Photo C) all the way down into the lock while watching the joint of the shuttle. The joint should still be on top where the operator can see it. Adjust knob (#7 Photo D) either clockwise to loosen or counter clockwise to tighten if the shuttle is too loose on rollers. Reset counter (#9 Photo D) to zero by pressing black knob on front of counter and you are ready to wind wire on the shuttle.

Push red Load-Wind switch (#10 Photo C) away from operator into reverse (load) position so that the shuttle rotates in reverse, or top going away from the operator. Feed the end of the magnet wire through the felt pad (#11 Photo C) and up into the small hole that you will see on the left wall of the shuttle just above the joint. Pass the wire from the inside groove of the shuttle to the outside. Pull through about three inches of wire and again pass it through the same hole from inside to outside. Turn on machine by switch (#21 Photo D) and set speed control #23 at a setting of 20 or more. Now press down on the foot pedal slowly until the shuttle starts to run in reverse. Line up the wire straight with the shuttle while loading, by adjusting the position of the wire guide (#11 Photo C) by means of a thumbscrew (#12 Photo D). It is best to guide the wire back and forth between the operator's fingers while wire is loading on the shuttle. This keeps the wire from building up on one side of the shuttle and will insure even layering of the wire in the groove of the shuttle.

The counter is wired so that approximately one foot of wire is wound on the shuttle per count while the machine is operating in load position. When counter (#9 Photo D) indicates the proper footage is placed on the shuttle, take foot off the pedal. Choose the proper size wire slider from the table on Page 4. Place the wire slider

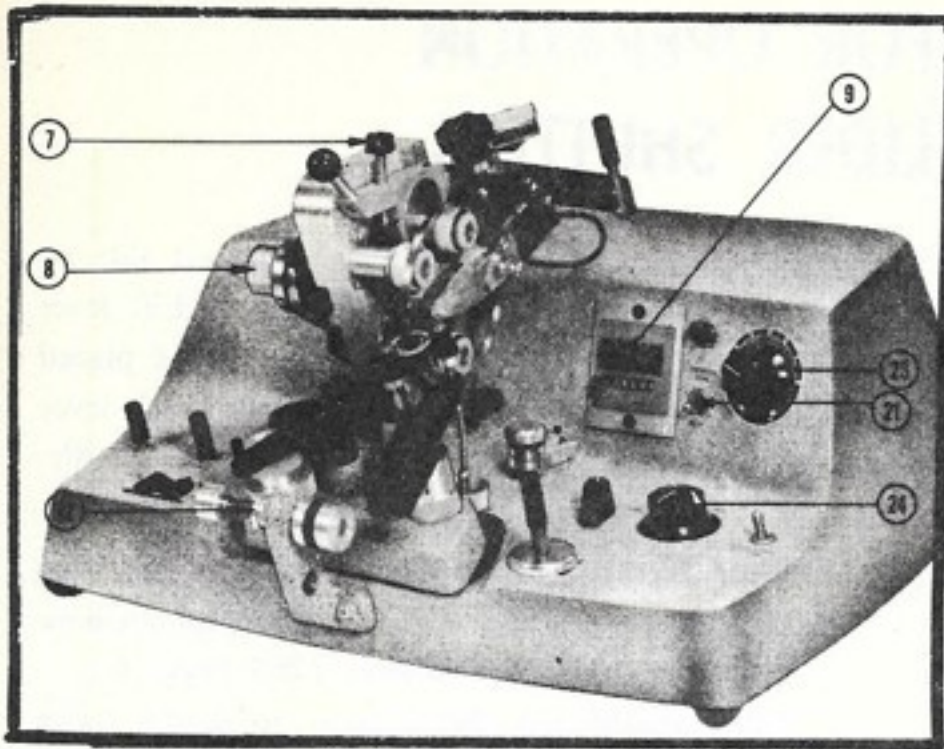


Photo D



Photo E

on top of the magnet wire by feeding the straight end of the slider through the core (Photo F) until the hooked end of the slider in the right hand is on top (Photo G). Drop the hooked end of the slider into the top of the shuttle and pull switch (#10 Photo C) into wind position. By turning the knurled knob (#8 Photo D) with the left hand, move the shuttle forward while holding the end of the wire off to the right until the hook of the slider catches the wire. TUG gently on the magnet wire to test the tension and you are ready to start winding the toroid. Place switch (#13 Photo B) in either clockwise or counter-clockwise position. The best layering of wire is obtained by counter-clockwise rotation of the core.

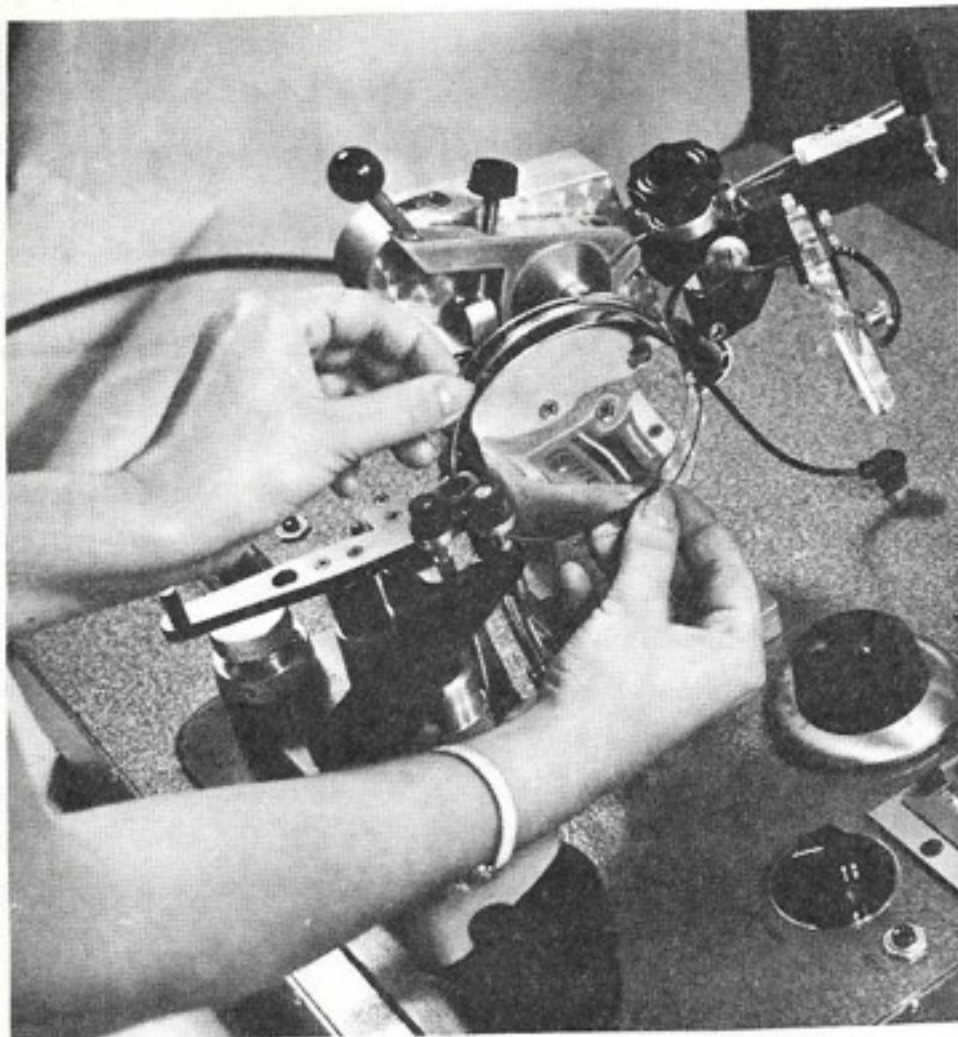


Photo F

By means of gentle pressure on the foot pedal, turn the shuttle until the magnet wire is directly across the face of the side plate. Then close the arm (#33 Photo H) up against the side plate. Push reset button on counter to reset to zero. Hold end of magnet wire upwards to the right and away from the operator and wind a few turns on the core with power from the foot pedal. If you are winding the core counter-clockwise 360 degrees, pass the end of the magnet wire behind the shuttle from right to left; (this is not necessary if winding clockwise). Hold the wire with the left hand and continue to wind. If you wish to reverse direction of core rotation, reverse the switch (#13 Photo H) on the lower left side of the machine. Switch #13 is the core reversing control to reverse the direction of core rotation when the automatic sector switch (#26 Photo H) is in "off" position. When switch #26 is in "on" position and the bank winding control knob (#24 Photo D) is on zero, the core will reverse itself back and forth automatically over the same sector, determined by the angle of the two plastic reversing arms (#28 Photo H). This angle may be changed by the operator to any angle up to 360 degrees by adjusting the two plastic reversing arms manually. For progressive bank winding, the operator selects either CW or CCW progression on control (#38 Photo H). Then as the bank winding knob (#24 Photo D) is advanced from one up to ten, there will be an increasing amount of progression from the original sector during each reversal.

BANK WINDING

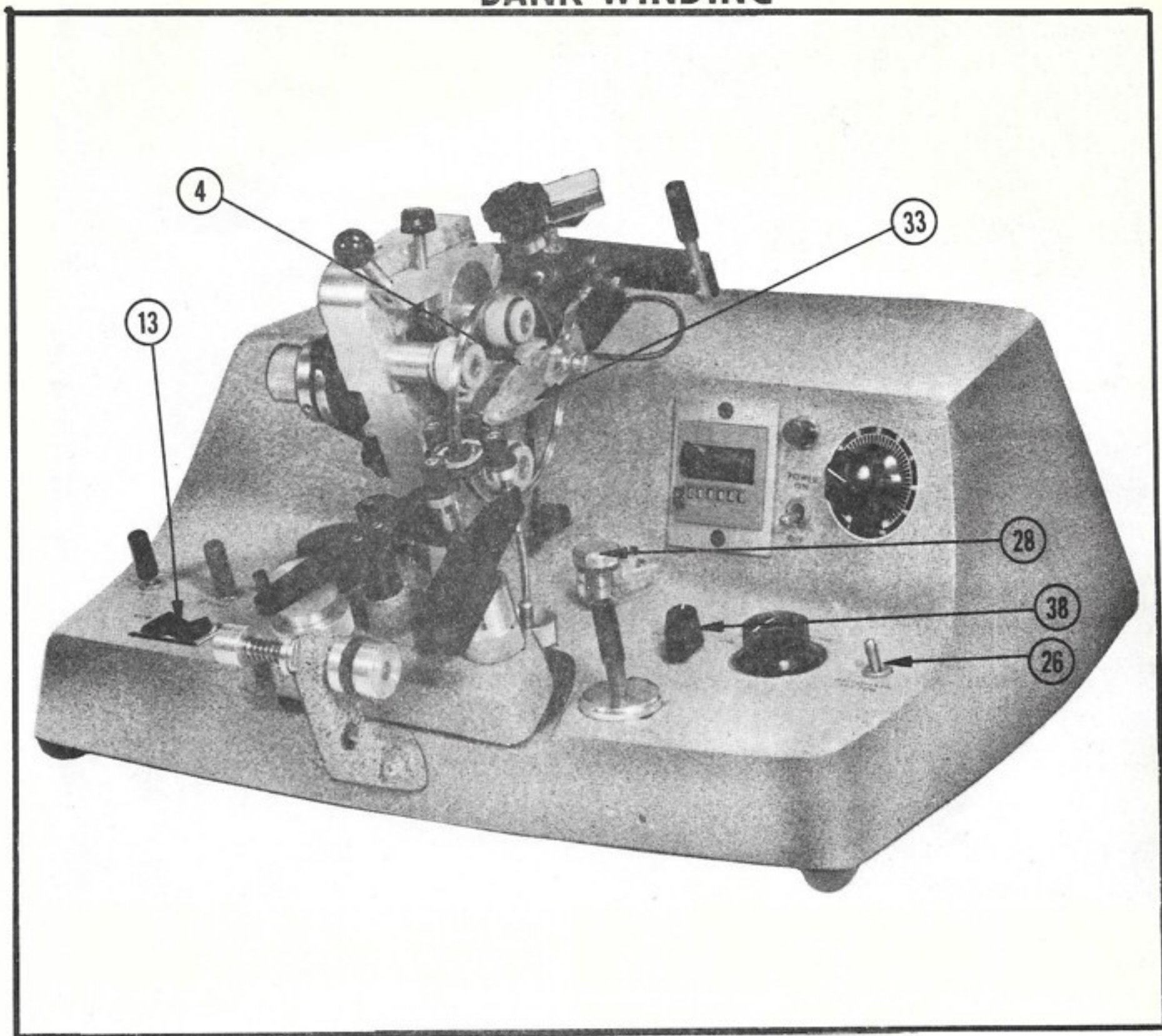
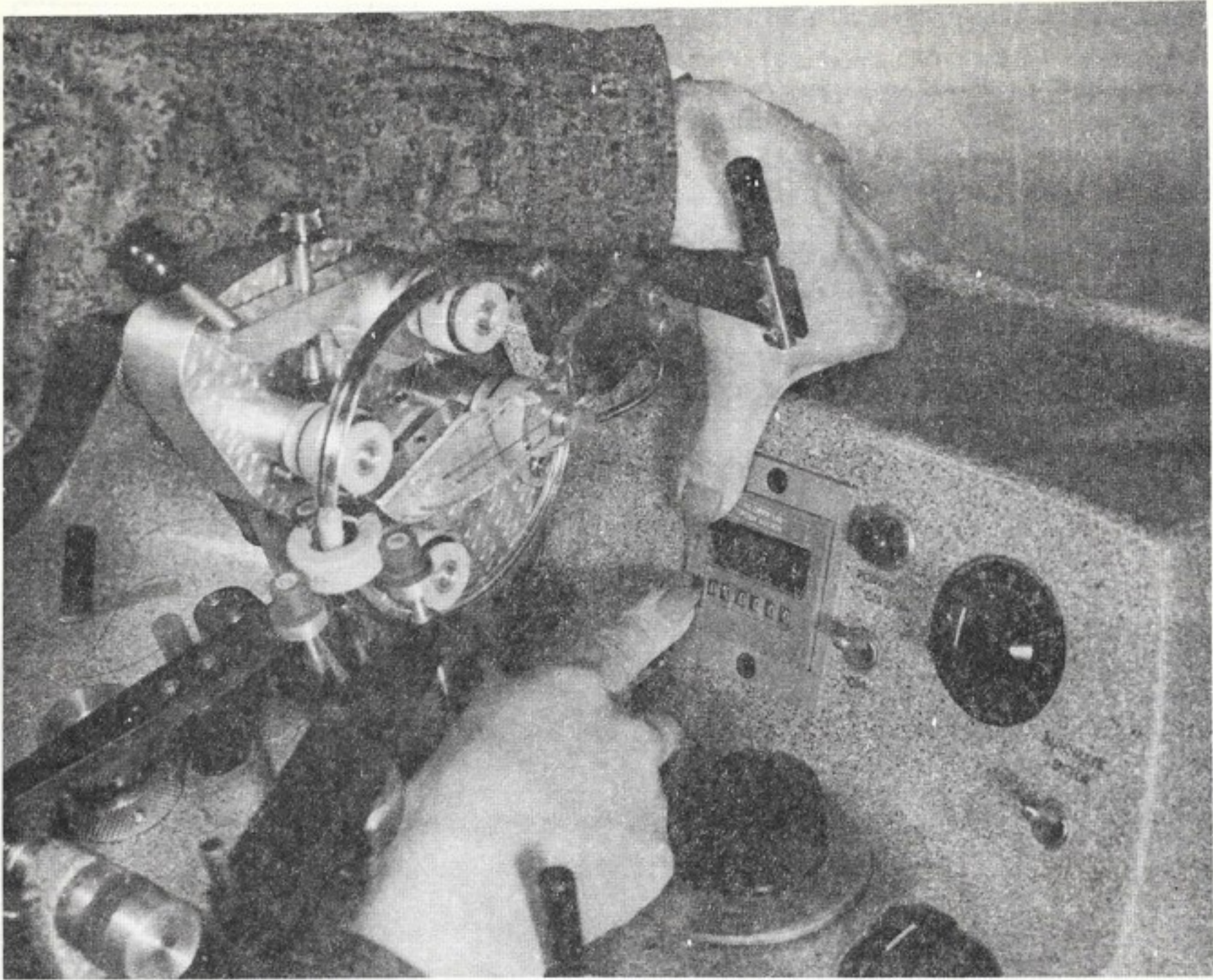


Photo H

1. Select direction of progression desired, either CW or CCW by setting control #38 Photo H.
2. Manually adjust angle of two sector reversing arms, #28 Photo H.
3. Turn automatic sector switch on, #26 Photo H.
4. Turn bank winding knob (#24 Photo D) from "off" position to number from one to ten as desired. The higher the number, the greater the degree of progression on each cycle.

NOTE: In order to operate the bank winding feature, the counter must be actuated. The side arm must be closed and wire must be winding onto the core past the counter contact under the side arm. To test the bank winding operation, the machine may be run in LOAD position since the counter is also activated by this reverse rotation.

PREDETERMINED COUNTER



Your Gorman Toroid Winder is equipped with a predetermined counter. When the machine is operated in load position, the counter will indicate the footage of wire wound onto the shuttle. When the machine is operated in wind position, the counter indicates the exact number of turns of wire on the toroid core.

To use the presetting counter, push the black reset button in and at the same time, roll the red plastic window up to expose the top row of presetting figures (see photo). With a fingernail set the predetermined number on the top row of digits. Next, close the plastic window which automatically locks. All of the digits must be in line for the presetting to work properly. If it is noticed that the digits are not in line, reset to zero using the black reset button and repeat the above setting of the top row of digits.

After a preselected number has been reached, a built-in switch is actuated which stops the winding. At higher speeds, it may be necessary to subtract a few numbers from the preset total to insure that the machine will be turned off at the exact desired count. To start the machine again, it will be necessary to push the black reset button. If presetting figures are all set at zero, the machine will not operate.

After the machine has been in use for a while, you will notice a slight discoloration of the side plate or backing plate just under the wire contact which actuates the counter. This causes higher electrical resistance at this point and should be periodically cleaned with crocus or fine emery cloth.

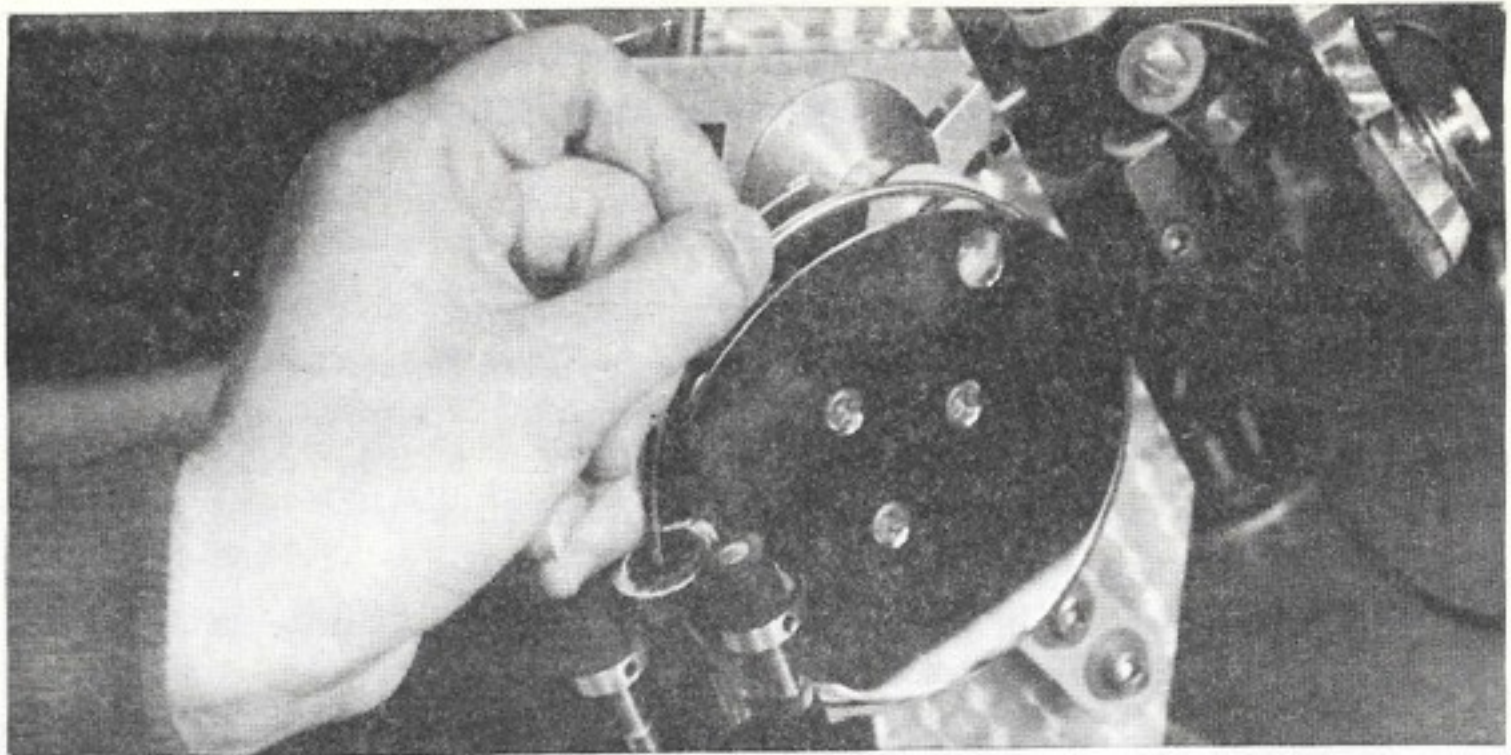


Photo G

TROUBLESHOOTING FOR WIRE BREAKAGE when using side plate and wire sliders

There is always a good reason for wire breakage and it is almost always correctable.

When using a wire slider riding on top of the magnet wire there are several physical features which should be understood. This wire slider should conform with the circular shuttle as closely as possible at all points. If it humps up any place, remove it and bend it judiciously at the right points until it does conform. Keep it polished by buffing occasionally with crocus cloth. The circularity of the slider may be checked on the aluminum cone supplied with the machine.

This slider must offer enough drag on the magnet wire to overcome the bending friction of the magnet wire as it reverses direction through the hook at one end. If the slider is too light for the magnet wire being used, instead of the magnet wire flowing smoothly through the hook it will lift a whole loop of wire off the shuttle. This will happen also if the shuttle is loaded too high with wire.

While you are winding a toroid in the normal manner, the wire slider is being dragged in a steady series of yanks over the surface of the magnet wire in the shuttle. Several noteworthy things are happening. 1. If you speed up too fast, centrifugal force will open up the slider and it will suddenly lose all tension causing a snarl. 2. As the slider is progressing around the shuttle, it will constantly try to push any slack wire ahead of it and also to push wire from any high spot on one side of the shuttle down into a low spot causing more slack to accumulate and eventually to cause a tangle around the hook and a break. This second occurrence is why it is so important to *wind up your shuttle so that the surface of the wire in the shuttle is level* while loading up the shuttle. If the wire tangles around the hook and breaks while winding a coil, look at the surface of the remaining wire and you will invariably find that it is higher on one side than the other.

If the wire breaks off flush with the hook of the slider, without any snarl, then the slider tension is too great. Either open up the slider with your hand to lessen the tension or use a lighter gauge slider (see slider chart on page 4). Try polishing the same slider.

If the wire breaks off leaving a few inches of wire dangling from the hook, then the wire has probably run under the side plate. There are many causes for this. First look to see if the shuttle is striking the inside of the toroid. If the shuttle is clear of the inside of the toroid check to see if the side arm brush is in proper position and has enough pressure against the side plate. Try increasing the closing pressure of the side arm brush. Also try raising the side plate to a higher position. Check the critical points illustrated in the line drawing on page 13.

TO AVOID TROUBLE, CHECK AS FOLLOWS:

Check to see if side plate is in proper position. Note particularly the bottom of the side plate. It should conform closely with the shuttle, and be on an even level with the outside of the shuttle at this point (see line drawing)

Are you using the right nylon rollers for this shuttle? (see chart page 4)

Are there nicks on the plate or on the shuttle? Buff smooth.

Did you load the shuttle correctly? (see above)

Try a heavier slider.

Buff the side plate to a mirror finish along the outer edge. This is a miraculous cure for most ailments.

INSTRUCTIONS FOR OPERATION USING SIDE SLIDER SHUTTLES AND FOUR INCH HEAD

The shuttles for side sliders are supplied in four sizes — 3/16" 1/4" 5/16" 3/8", in both 4" and 6" sizes. These are finished core ID sizes through which these shuttles will pass with the sliders in position. Side sliders come in three tensions for each of the above listed shuttles. The tension is determined by the size of the tail of the slider. The extra heavy sliders are used for wire in the range from #26 AWG to #30 AWG. The heavy weight sliders are used in the range from #30 to #38 AWG. The light weight sliders are used for wire in the range from #38 AWG to #43 AWG. The side sliders are now available in either delrin or beryllium copper. For production runs and the heavier wire sizes, we suggest sliders made of metal.

There are two sizes of side sliders. The smaller size side sliders will fit the 3/16" and 1/4" side slider shuttles. The larger size side sliders will fit the 5/16" and 3/8" side slider shuttles.

If metal sliders are not purchased with the shuttle, we suggest in some cases, that the shuttle be sent back to the factory for proper fitting of metal side sliders.

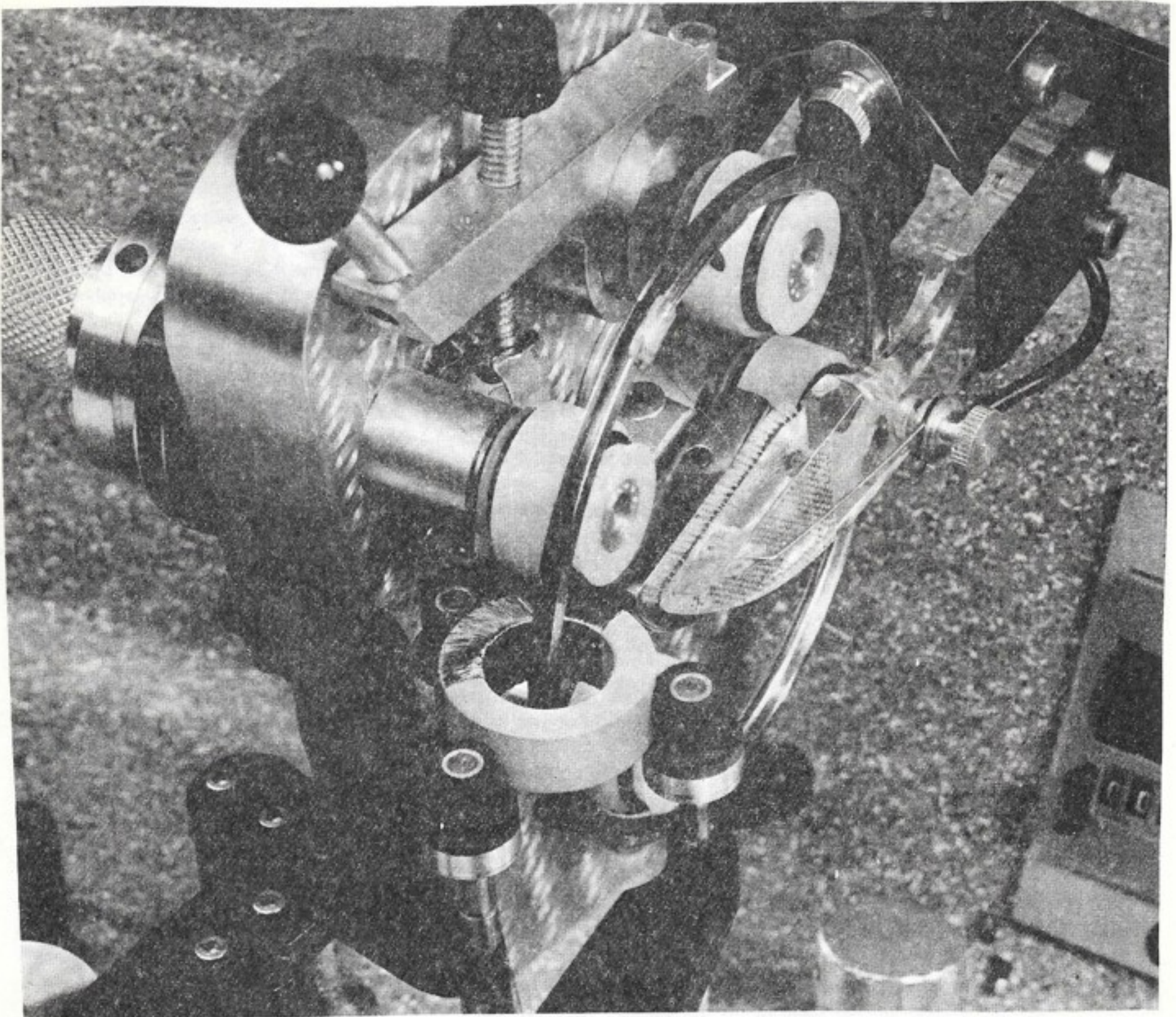


Photo J

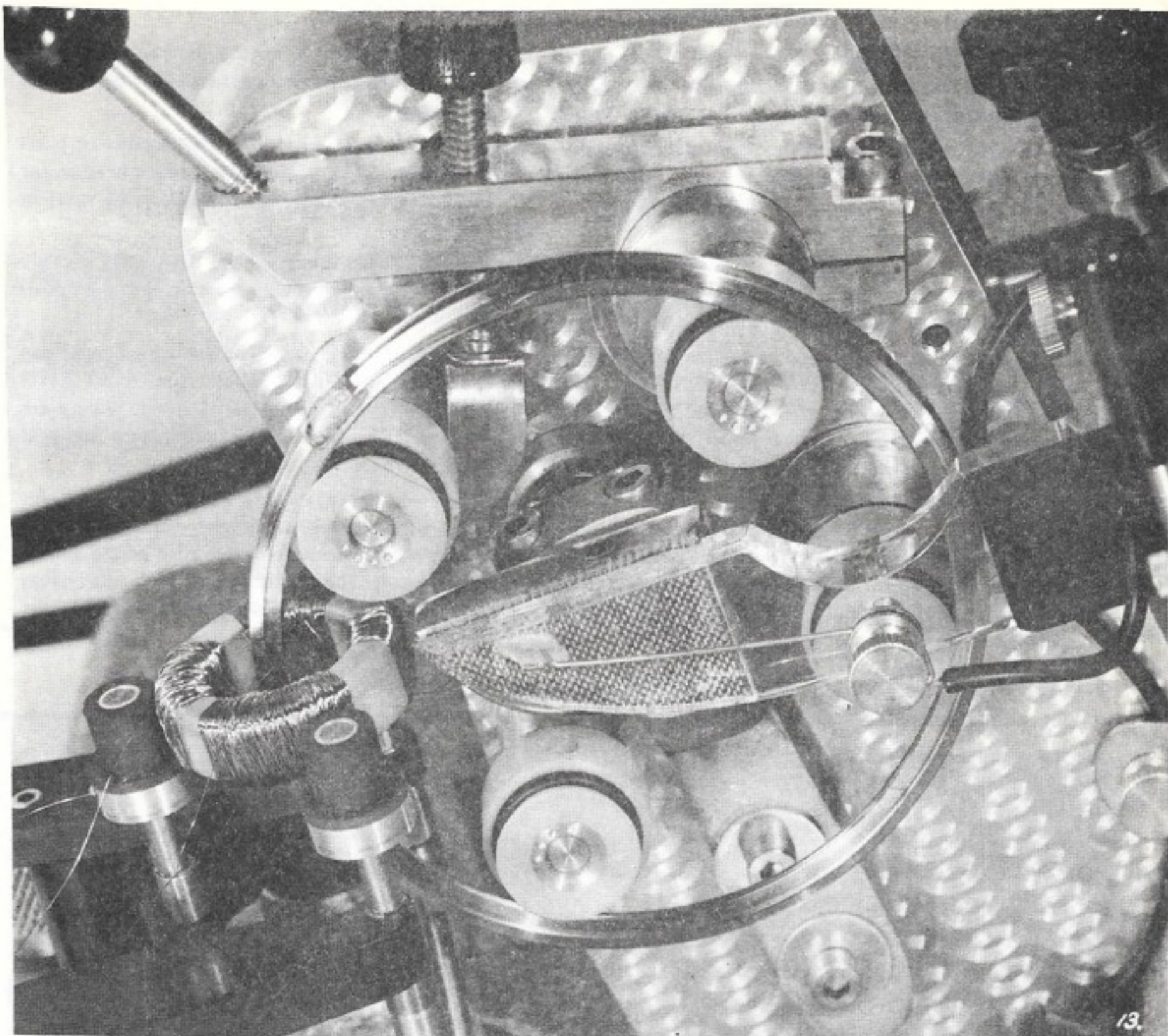


Photo K

To change the machine over from wire slider to side slider, first, remove the side plate which was used with the wire slider. Replace with the adjustable back plate assembly shown in photo K and set according to photo K. The outer part of the backing plate slides along the supporting square shaft so that the wire may be held close to the core before passing onto the core. This is important. Check the table on page 4 to be sure that the proper rollers are chosen for the size shuttle you will be using. Install the rollers, place the proper slider on the shuttle, (light, heavy or extra heavy) and place the shuttle on the machine following the instructions for operation with wire slider shuttles. When the magnet wire has been wound onto the side slider shuttle, hook the end of the wire through the slot in the side of the slider. Tension of the slider may be varied to accommodate a considerable range of wire sizes (less tension for lighter wire) by bending the tail of the slider up or down a little, before inserting the slider tail into the groove along the side of the shuttle.

The top surface of the backing plate and the mohair brush on the side arm should line up with each other and also with the top of the core to be wound (see line drawing on page 14). Keep firm pressure on the side arm or mohair pad when using the side slider. This keeps the wire from catching on the bottom roller. Also keep the mohair as close to the core as possible, along with its adjustable backing plate (see photo K).

When using magnet wire of size #30 or heavier, additional tension is needed on the brush to prevent the stiffer sizes of wire from lifting up and off the side slider.

OPERATION WITH THE SIX INCH HEAD

The six inch head and the four inch head are interchangeable on the Model 700 by removing the two screws beneath the head and attaching the other head in the same position. Basically, the operating procedure for both heads is the same, but there are a few changes that should be noted by the operator.

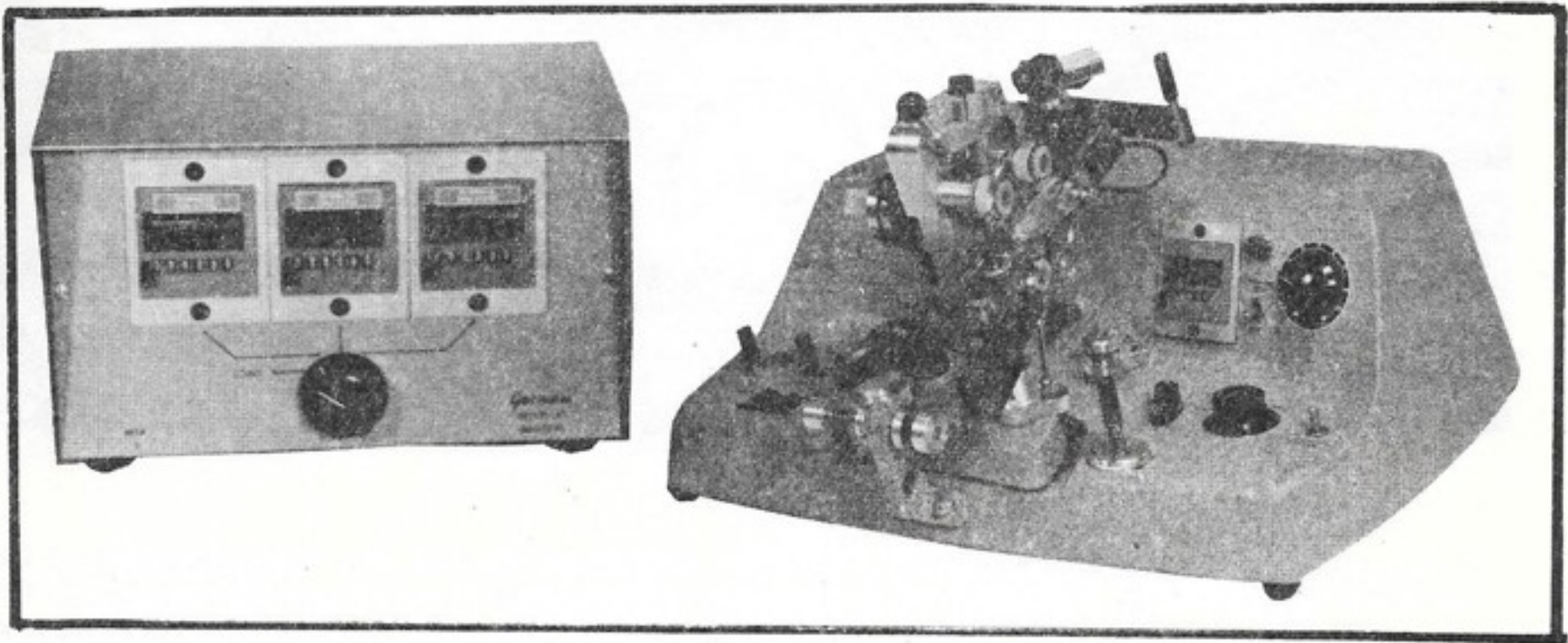
The #4 and #5 rollers which fit the four inch head also fit the six inch head which reduces the number of parts which are necessary to stock. The footage counter for loading shuttles works just as well for the six inch head as for the four inch head because you are counting surface speed and distance traveled by the shuttle, which is the same in both cases.

The six inch head has been designed for use only with side slider shuttles. These shuttles are 3/16", 1/4", 5/16", and 3/8". These are the finished core ID sizes through which these shuttles will pass with the side sliders in position. There are no wire slider shuttles for the six inch head.

The side sliders, which are the same as for the four inch shuttles, are made in three sizes. The extra heavy size can wind in the range from #22 AWG to #30 AWG. The heavy size can wind in the range from #30 AWG to #36 AWG. The light weight size can wind in the range from #36 AWG to #40 AWG. The side sliders are supplied in either delrin or beryllium copper. We suggest the metal sliders for usage with most production runs and heavier wire whereas the delrin sliders are ideal for prototype work and for lighter gauge wire.

The backing plate and brush assembly is quite different on the six inch head. The whole assembly moves as a unit by loosening the same cap screw as in the case of the four inch head (#20 photo N). The proper position of the assembly is such that the surface between the brush and backing plate is aligned with the outer edge of the shuttle and generally centered with the core being wound, and as close as possible to it. The backing plate itself, just behind the brush, has a swiveling ability so as to best match the surface of the brush. This adjustment is made with the single screw in the center top of the backing plate.

PREDETERMINED COUNTER



The Gorman Machine Corporation offers an optional predetermined counter (MSR 3) to be used in conjunction with the Model 700. This unit was designed for those customers who wish to utilize more predetermined stops than the one unit supplied in the basic machine.

The load position allows the operator to use the counter in the machine to load wire onto the shuttle. The presets can be set for any predetermined number. A selector switch allows the operator to wind to the turns set on the first preset register, and the winder will brake and stop at that count. The operator can then pull out a tap on the coil, set the selector switch for the next predetermined stop on the second register, and continue winding. The second counter will stop the winder and the operator can then perform the necessary functions on the coil. The same process may be repeated for the third counter.

The MSR — Multi Set Register — plugs into the left hand side of the toroid winder (#35 photo B). To activate this multi-set register, the operator moves the Internal-External switch on the machine (#37 photo B) up into the External position. See page 9 for instructions in setting predetermined count.

SIDE PLATE SETUP

Four Inch Head

Contact pressure light but firm on plate. If fine wire hangs up on contact, bend wire out slightly. If counter skips or double counts, tighten wire up by removing it and bending in. Do not have tip bind on edge of hole in plastic.

Align this curve of sideplate with this roller.

This surface even with top of core or higher up.

Tip of brush close to edge of plate.

Top of core rotators to be even with top of shafts.

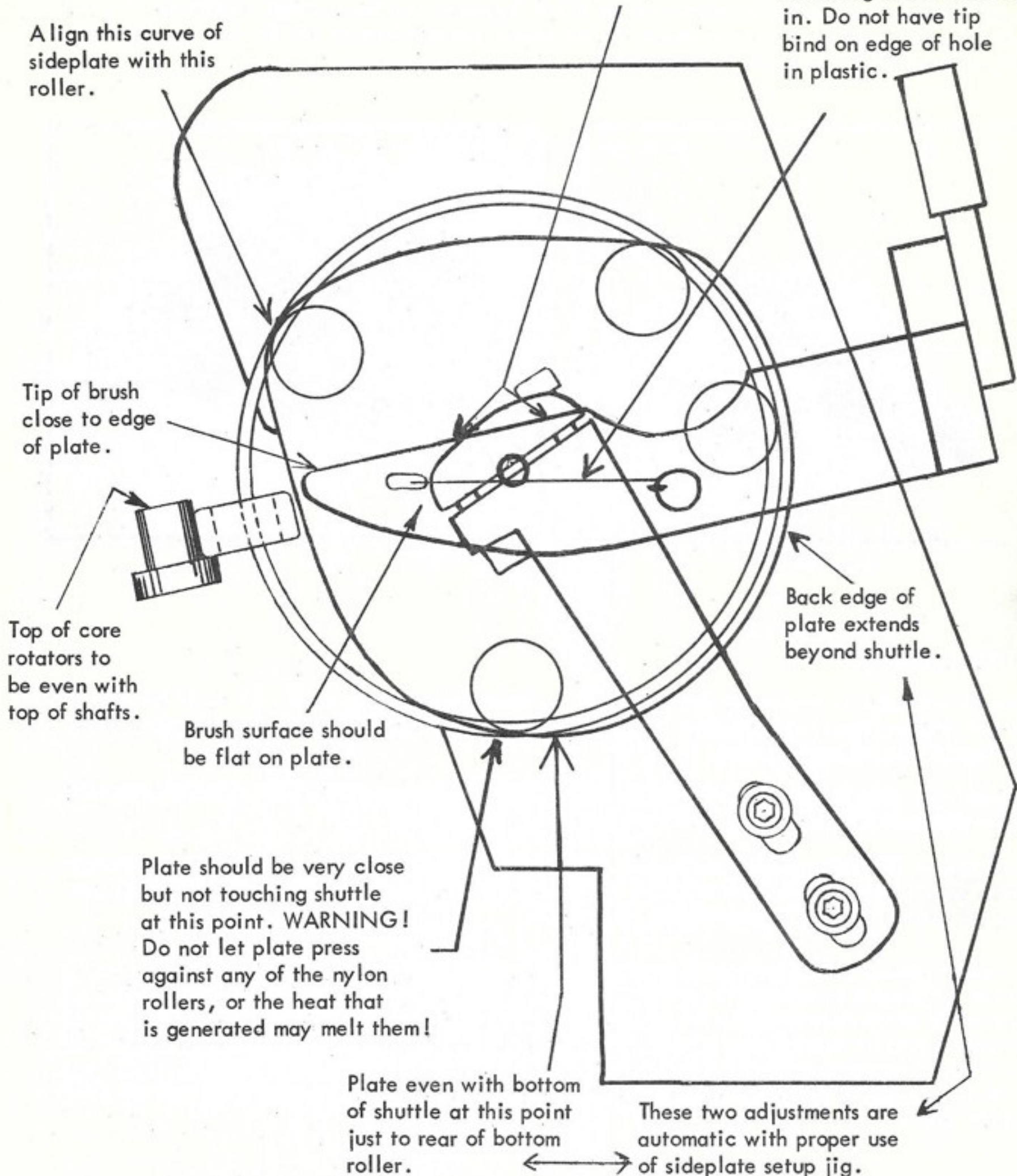
Brush surface should be flat on plate.

Back edge of plate extends beyond shuttle.

Plate should be very close but not touching shuttle at this point. **WARNING!** Do not let plate press against any of the nylon rollers, or the heat that is generated may melt them!

Plate even with bottom of shuttle at this point just to rear of bottom roller.

These two adjustments are automatic with proper use of sideplate setup jig.



ADJUSTMENTS

1. CORE ROTATORS

Most toroidal cores can be accommodated with the three different sets of core rotators which are supplied with the machine. The set which will come on your machine is made of aluminum with the upper part rubber to cushion and drive the core. When resetting the position of the core rotators, do not push them all the way to the bottom of the three shafts, unless you are winding a tall core. The usual position is near the top of the shafts.

The core should be positioned at the midpoint of the axis of the shuttle (see line drawing). Tighten the set screws on the core rotators gently. In order to remove the left rotator, you may have to shift the entire core holder assembly by loosening the cap screw (#16 photo M)

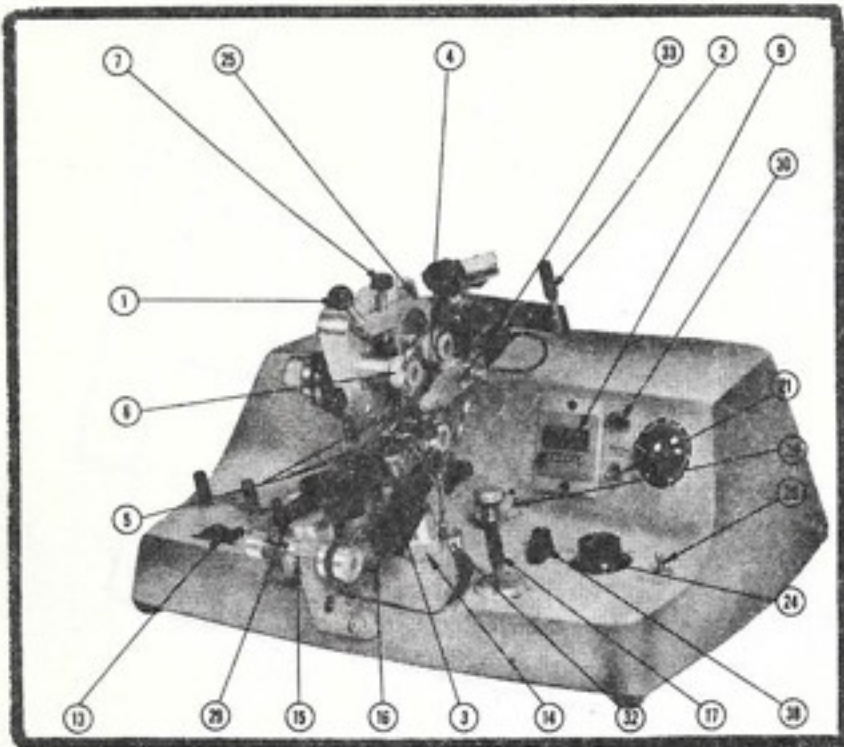


Photo M

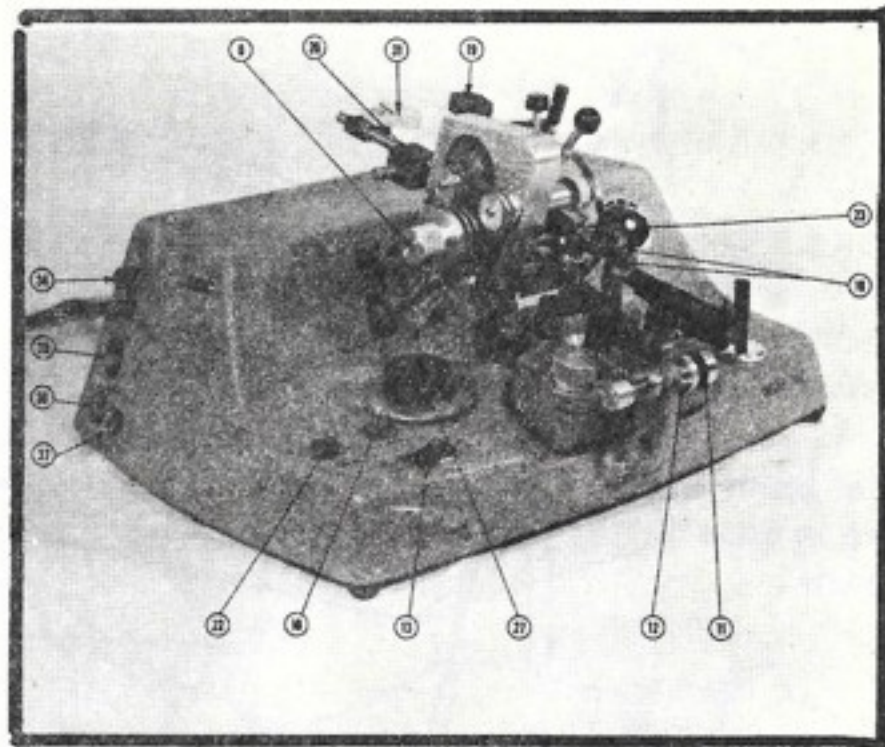


Photo N

2. HEAD ASSEMBLY

Shuttle — In order to increase the driving force of the shuttle on the rollers, knob (#7 photo M) may be turned in either direction, but should only be turned to the point where the shuttle joint just parts and then backed off until just touching again.

Magnet — In order to increase or decrease the holding force of the magnet which holds arm (#2 photo M) either align or misalign magnet with the striker bar.

Side Arm — The closing pressure on the arm (#2 photo M) may be adjusted by loosening the socket head screw which binds the shaft below the knob (#19 photo N). Turn this knob clockwise to increase the pressure for heavier wire and counter-clockwise for finer wire.

The pressure required is from four ounces to about one pound, measured at the handle. The side arm is able to be moved in any direction by loosening the socket screw in block (#20 photo N). This permits the mohair brush (on the arm) to be placed correctly against the side plate or backing plate. The correct position is flat against the side plate or flat against the backing plate. Do not have the brush tip project beyond the cut away edge of the side plate or the wire may become hung up at that point. Keep the wire contact clean. If the counter skips, wipe off the contact and the plate with a clean cloth. The top edge of the plastic arm should be lined up with the top edge of the core to be wound.

Side Plate — The position of the side plate may be adjusted in three directions by means of the socket head screw inside the plate which binds the quarter inch shaft projecting from the plate, and by means of the socket head screws which position the arm below the side plate through the oversized holes in the arm. The side plate serves as a gradual ramp to lift the magnet wire off the shuttle at the bottom and rear where the pull is greatest. The rear edge of the plate should be far enough back as to just clear the shuttle at the rear.

Between the two bottom rollers, just to the rear of the bottom of the shuttle, both the shuttle and the edge of the plate should be at the same level (see line drawing). The plate should lie almost against the ends of all four rollers but still not touch them. Remove plate and bend it slightly with the hands against a wood surface if necessary in order to get this adjustment. Again, the most important point to watch is at the bottom front roller where it should conform closely with the shuttle but not touch. After the plate is in position, check for clearance from the rollers by tapping with a finger (not the fingernail) against the plate at the position of each roller. If you hear a slight rap as the plate strikes the roller beneath, you have the right spacing between the rollers and the plate. If there is no rap the plate is either too tight (too close to the rollers) or too far away. If the plate is too tight, the friction will actually melt the edges of the nylon rollers. Proper clearance is about the thickness of paper, especially at the bottom back roller. The clearance can be greater at the other three rollers.

Fine Adjustment Knob — If knob #7 turns too freely, it may be tightened as follows: Remove Handle #1 (brass rod with black knob) and insert small allen wrench into hole in end of arm. Tighten on set screws which tightens up on leather insert pressing threads of rod #7.

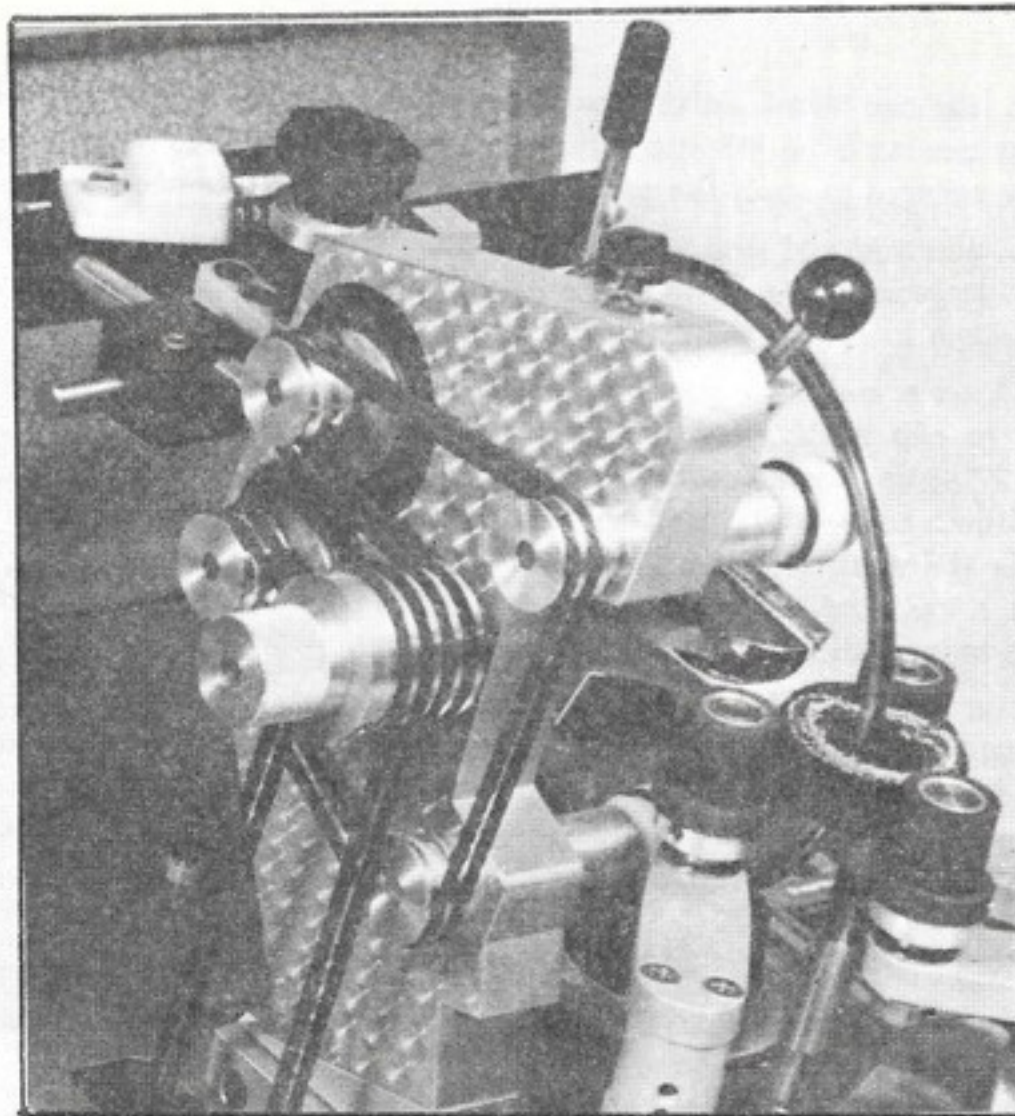


Photo P

ROLLER ADJUSTMENTS FOR DIFFERENT SHUTTLES

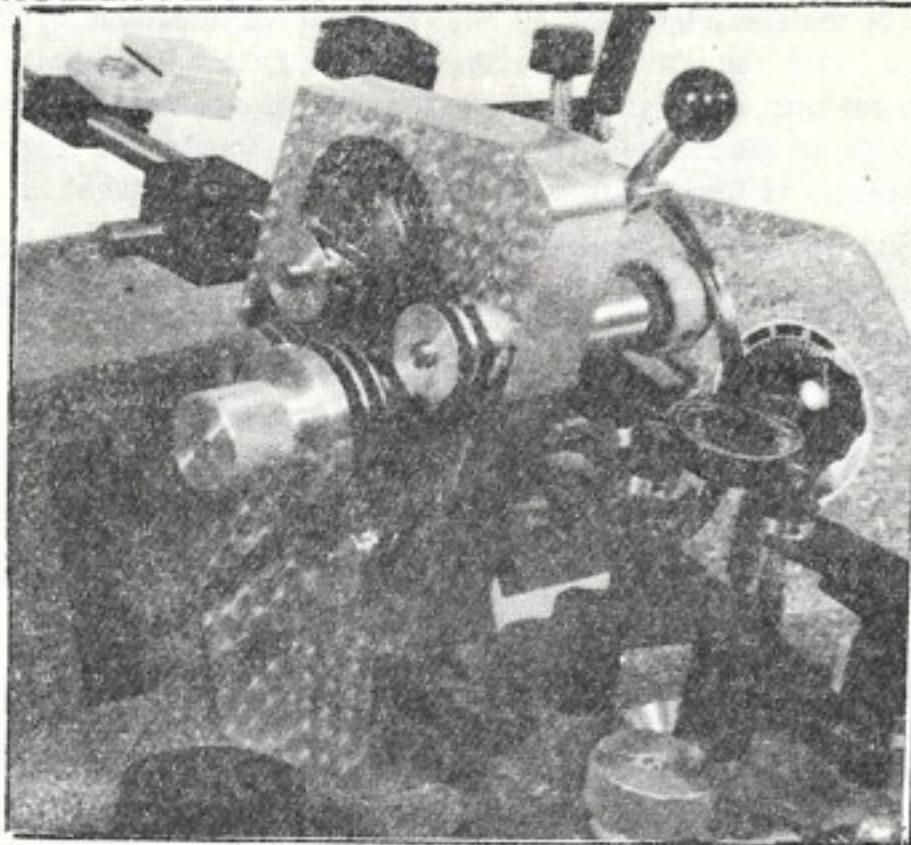


Photo S

The photo shows that the rear two shuttle rollers are on eccentrics and are geared together so that they can be moved inwards together by moving lever M1 attached to the upper roller mount. When changing shuttles the setting of this arm will have to be changed to apply the proper driving force to the shuttle through the rollers.

Loosen cap screw #25 in photo M and then place a small allen wrench between the teeth on the top large gear shown in photo S. These two gears now are free of the lever arm and should be rotated just enough to bring the rollers outward or inward enough to contact lightly against the shuttle.

Clamp up cap screw M25 again and make your final adjustment of roller contact pressure with knob (#7 photo M) while it is seated in its clip holder. The proper adjustment is such that the shuttle is just short of opening at its joint. Another way of setting the adjustment, when using the side slider shuttles, is to operate the machine with an empty shuttle. Adjust knob (#7 photo M) until a clicking sound is heard from the shuttle while rotating, and then loosen knob #7 until the clicking stops. If the shuttle is opened too much, the wire may catch in the opening. If the shuttle is too loose, the shuttle may bend at the joint when loaded tightly with wire. When the arm is lifted upwards, the rollers will release the shuttle for removal.

If the rubber drive rings on the nylon shuttle rollers become worn or should break, replace them with spares supplied. They are best put on with a hooked piece of music wire of about .030" diameter. Drop them into the groove in the roller and then hold the bent end of the music wire against the rubber ring while the rollers are being driven, until the rings run true and evenly. The side plate must be removed to do this. Standard (0) rings may be used in an emergency. We supply rings made of a special compound.

SHUTTLE ROLLERS

Rollers come in five different sets of four each. Each set is reversible to accommodate different sizes of shuttles. Each set is numbered by dots on the large ends of the rollers only.

Wire slider shuttle rollers have two black and two white per set. The white rollers are larger and should go on the rear shafts.

Rollers for Wire Slider Shuttles	Unnumbered Ends	Numbered Ends
Set ONE, identified by one dot.....	.055 & .062	.075
Set TWO, identified by two dots.....	.100	.115 & .135

Side Slider Shuttle Rollers have four white rollers per set.

Rollers for Side Slider Shuttles		
Set FOUR, identified by four dots.....	3/16"	1/4"
Set FIVE, identified by five dots.....	5/16"	3/8"

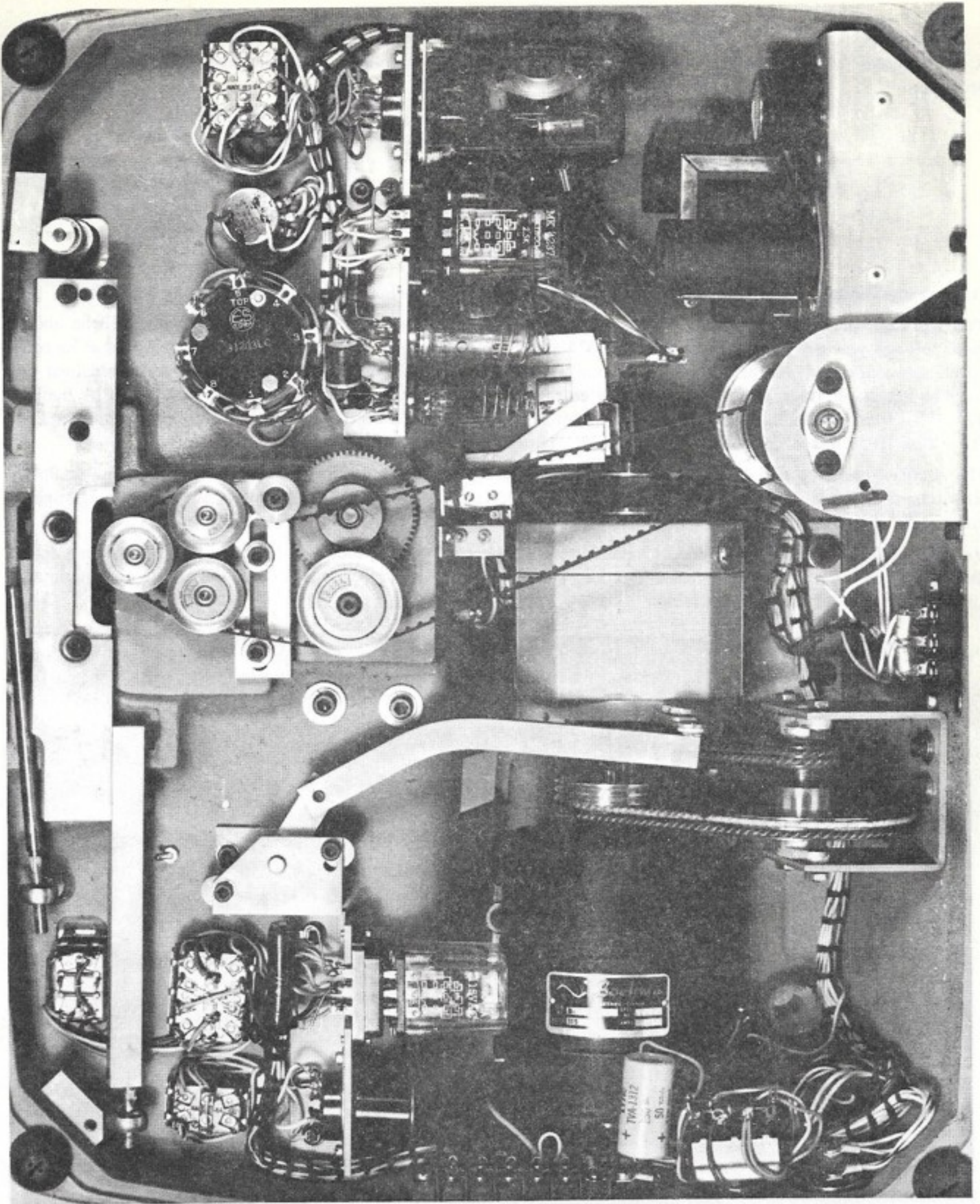


Photo R

WIRE SLIDERS

A general guide for wire sliders when using formvar magnet wire is as follows. You will need a micrometer to identify them.

.018" slider	#46 HF to #43 HF
.020" slider	#43 HF to #40 HF
.024" slider	#40 HF to #37 HF
.028" slider	#37 HF to #35 HF
.036" slider	#35 HF to #32 HF
.040" slider	#32 HF to #30 HF
.045" slider	#30 HF to #28 HF

When using Teflon, Litz, Bifilar or Trifilar wire use the next size heavier slider than shown in the table above.

You will find that the maximum wire size which may be comfortably wound with the .062 shuttle will be about #40 HF and you will have to use a .020 or .024 slider. Any slider may be bent to a little smaller radius at its center area to accommodate a heavier wire size than what is recommended. A little more tension may be obtained by roughing up the inside of the slider with a fine emery. Keep the hook area of the slider to a high polish by buffing with a hard chrome buffing compound with a cotton cloth wheel. We urgently recommend the purchase of a 1/4 H.P. 3600 RPM Bench grinder set up with two 6" cotton buffing wheels.

The shuttles, and side plates should be periodically buffed to a mirror finish on a cotton wheel rotating at 3600 RPM charged with a hard chrome buffing compound. This may be purchased from any local electroplating supply house. It is a hard chrome buffing compound 6-B-66 Grey for coarse and 6-B-72 White for fine.

You will notice that some of the sliders have flattened hook ends so that they will have less hook projecting from the shuttle when used with the smaller shuttles. These are for use with the smaller shuttles where the minimum amount of projecting slider is desirable.

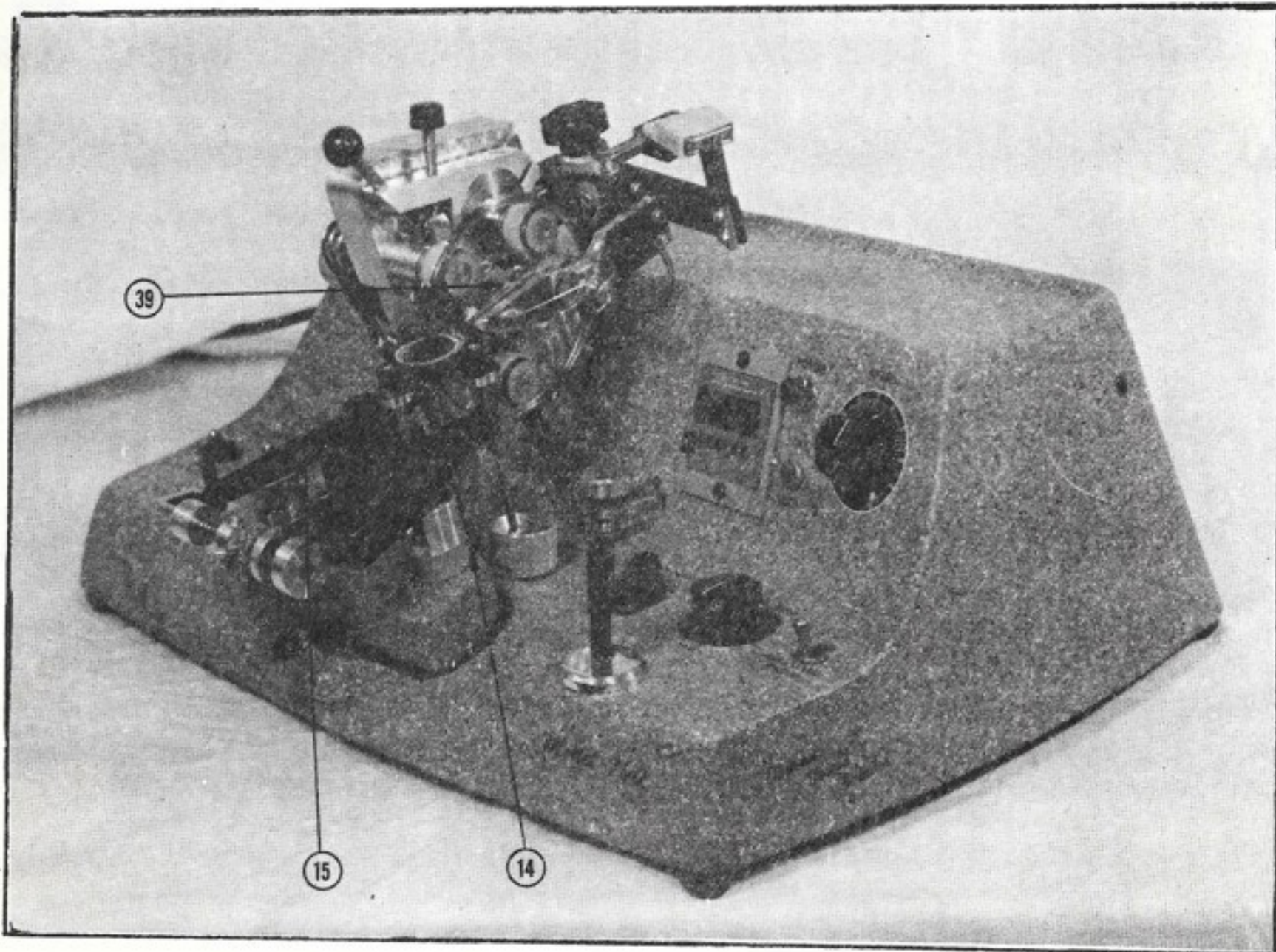


Photo Q

SHUTTLE WIRE CAPACITY CHART
FOUR INCH DIAMETER SHUTTLES

	SIDE SLIDER SHUTTLES						WIRE SLIDER SHUTTLES					
	3/8"	5/16"	1/4"	3/16"	.250"	.187"	.135"	.100"	.075"	.062"	.055"	
#26	95	58	30									
#27	115	70	40	17								
#28	150	85	50	22								
#29	190	105	62	27								
#30	225	130	75	33								
#31	280	160	95	40								
#32	340	200	120	45	200	110	40					
#33	445	255	145	60	250	130	50					
#34	550	310	170	75	300	150	60	25				
#35	700	390	225	110	385	220	85	42				
#36	875	475	285	140	465	285	115	60	20			
#37	1125	600	355	175	600	355	140	75	25			
#38	1365	735	420	215	715	425	170	90	32	22		
#39	1775	990	590	280	975	535	225	125	45	33		
#40	2200	1250	750	345	1250	645	295	160	60	45	23	
#41	2740	1550	945	435	1650	850	360	190	78	58	30	
#42	3250	1860	1140	525	2050	1035	460	225	95	70	38	
#43	3775	2300	1380	650	2590	1225	565	285	115	93	55	
#44	4300	2750	1640	775	3150	1425	670	345	135	115	70	
#45			1880	900	3980	1690	835	415	175	145	95	
#46			2125	1020	4800	1960	990	490	210	190	120	

Wire Size (Heavy Formvar)

GORMAN MACHINE CORPORATION

MODEL 700 TOROID WINDER PARTS LIST

TO ASSIST OUR ORDER DEPARTMENT IN EXPEDITING YOUR SPARE PARTS OR ACCESSORIES ORDER, IF A PART NUMBER IS LISTED TO THE LEFT OF THE ITEM, PLEASE INDICATE THE NUMBER ON YOUR PURCHASE ORDER.

WIRE SLIDER SHUTTLES:		
.055"		\$ 55.00 ea.
.062"- .075"- .100"- .115"- .135"		\$ 40.00 ea.
WIRE SLIDERS:		
.018"- .020"- .024"- .028"- .036"- .040"- .045"		\$ 3.00 ea.
SIDE SLIDER SHUTTLES:		
3/16"-1/4"-5/16"-3/8" for 4" Head		\$ 65.00 ea.
3/16"-1/4"-5/16"-3/8" for 6" Head		\$ 85.00 ea.
DELRIN SIDE SLIDERS:		
3/16"-1/4"-5/16"-3/8"		\$ 3.00 ea.
Specify Light, Heavy, or Extra Heavy		
METAL SIDE SLIDERS:		
3/16"-1/4"-5/16"-3/8"		\$ 9.00 ea.
Specify Light, Heavy or Extra Heavy		
SHUTTLE ROLLER SETS:		
Set #1-Set #2- Set #4- Set #5		\$ 12.00 set
REPLACEMENT "O" RINGS FOR SHUTTLE ROLLERS		\$ 2.50 set
(Set of 8) Specify which roller set		
SIDE PLATES:		
Specify #1A or #2A		\$ 18.00 ea.
BACKING PLATES:		
For 4" Head		\$ 18.00 ea.
For 6" Head		\$ 18.00 ea.
PLASTIC SIDE ARMS:		
For 4" Head		\$ 9.00 ea.
For 6" Head		\$ 9.00 ea.

HEAD ASSEMBLY

H-1	Magnet	\$ 1.50 ea.
H-2	Counter Wire Contact	\$.90 ea.
H-3	Knob for Side Arm Tension	\$.75 ea.

H-4	Ball Bearing #F4DD	\$	5.00 ea.
H-5	Ball Bearing #F5DD	\$	5.00 ea.
H-6	1/4" Shuttle Roller Shafts	\$	1.00 ea.
H-6-S	Shuttle Roller Shaft Grip Rings (#5555-25MF-Set of 10)	\$	1.00 set
H-7	Stainless Screw for Shuttle Drive Tension	\$	5.00 ea.
H-8	Plastic Knob for Shuttle Drive Tension Screw	\$.50 ea.
H-9	Center Main Shaft-5/16"	\$	1.00 ea.
H-9-S	Main Shaft Grip Rings (#5555-31MF-Set of 5)	\$	1.00 set
H-10	Lead Wire From Head to Casting	\$	1.50 ea.
H-11	Side Plate Bracket-Casting	\$	7.50 ea.
H-S-1	Side Arm Tension Spring	\$	2.25 ea.
H-S-2	Tension Clip for Fine Adjustment Screw (For Shuttle Roller Drive Pressure)	\$	1.00 ea. ^{3²⁵}

CORE ROTATOR ASSEMBLY

CR-5-S	Small Core Rotators (Set of 3) (For Small Core Rotator Assembly)	\$	6.00 set
CR-5-M	Medium Core Rotators (Set of 3) (For Small Core Rotator Assembly)	\$	6.00 set
CR-5-L	Large Core Rotators (Set of 3) (For Small Core Rotator Assembly)	\$	6.00 set
CR-5-XL	Extra Large Core Rotators (Set of 3) (For Large Core Rotator Assembly)	\$	12.00 set
CR-14	Busings for Core Rotator Shafts	\$	1.00 ea.
CR-15-S	Tension Spring (For Core Rotator Closing Pressure)	\$	2.25 ea.
CR-16	Flexible Shaft (Specify which arm)	\$	1.00 ea.
CR-17	Snap Rings for Core Rotator Shafts (#5103-18-Set of 10)	\$	1.00 set
CR-18	Core Rotator Shafts-Set of 3 COMPLETE WITH UNIVERSALS	\$	40.00 set
CR-19	Core Rotator Shaft, Singly (Specify for Right, Left, or Short Arm)	\$	15.00 ea.
CR-AS	Complete Core Rotator Assembly (Specify Large or Small)	\$	134.00 ea.

BELTS

B-9	Large Round Belts-Motor to Winding Head	\$	2.50 ea.
B-10	Medium Round Belts-Pulleys Around Head	\$	2.50 ea.
B-11	Special Round Belts-Motor to Pulley Assembly	\$	2.50 ea.
B-12	Special Round Belts- Pulley Assembly to Transmission	\$	2.50 ea.
B-13	#187L050 Timing Belt-Transmission to Idler	\$	6.00 ea.
B-14	#250X1037 Timing Belt- Clutch Shaft to 22XL037 Pulley	\$	6.00 ea.

ELECTRICAL PARTS

E-1	Boehm Motor #1740	\$	40.00 ea.
E-3	Variac #BT171	\$	15.00 ea.
E-5	HENGSTLER REGISTER-NEW, NO EXCHANGE	\$	69.00 ea.
E-5-A	HENSGTLER REGISTER-REBUILT WITH EXCHANGE	\$	50.00 ea.

E-6	Pink Plug-In Amplifier NEW	\$	50.00 ea.
E-6A	Pink Plug-In Amplifier (With Exchange Trade-In)	\$	25.00 ea.
E-8	Rectifier #20A6	\$	7.50 ea.
E-11	Boehm Motor Brushes	\$	2.50 set
E-13	Gas Tube #5823	\$	3.00 ea.
R-1	MK4237-2.5K D.C. Relay	\$	8.50 ea.
R-2	MKTRO3A-115 Volt A.C. Relay	\$	8.50 ea.
R-4	SM5DS Relay	\$	9.50 ea.
S-1	DPDT Power On-Off Switch	\$	4.00 ea.
S-2	DPDT Motor On-Off Switch	\$	4.00 ea.
S-3	4PDT Load-Wind Switch	\$	6.50 ea.
S-4	4PDT Bank-Wind Switch	\$	6.50 ea.
S-5	4PDT Internal-External Counter Switch	\$	6.50 ea.
S-6	2P3T Core Rotation Switch	\$	8.00 ea.
S-7	PQ11-141 Bank Wind Pot & Switch	\$	6.50 ea.
S-8	31203LC Bank Wind Progression Switch	\$	10.00 ea.
S-9	BZ2RL2 Micro Switch for Loading Count	\$	5.00 ea.
S-10	1SM1 Micro Switch	\$	3.00 ea.

MISCELLANEOUS

M-1	Lamp	\$	20.00 ea.
M-2	Foot Pedal	\$	45.00 ea.
M-3	Pilot Light	\$	2.00 ea.
M-4	Lamp Receptacle	\$	1.00 ea.
M-5	Rubber Switch Seal	\$	1.25 ea.
M-6	Line Cord	\$	2.50 ea.
M-7	Knob for Bank Wind Switch	\$	1.00 ea.
M-11	Knob for CCW or CW Bank Wind Selection	\$	1.50 ea.
M-12	Dereeler Assembly	\$	22.00 ea.
M-13	Vernier Dial	\$	7.50 ea.

NOTE: MINIMUM ORDER IS \$5.00

EXPORT PRICES ARE APPROXIMATELY 10% HIGHER THAN THEN SCHEDULE ABOVE.
PLEASE CHECK WITH YOUR EXPORT REPRESENTATIVE FOR EXACT ACCESSORY AND
PART PRICES.

REVISED: 10/15/70

MAINTENANCE

Check motor brushes periodically. IT IS NOT NECESSARY TO REMOVE MOTOR TO REPLACE BRUSHES.

Keep contact wire on side arm clean and free of burrs.

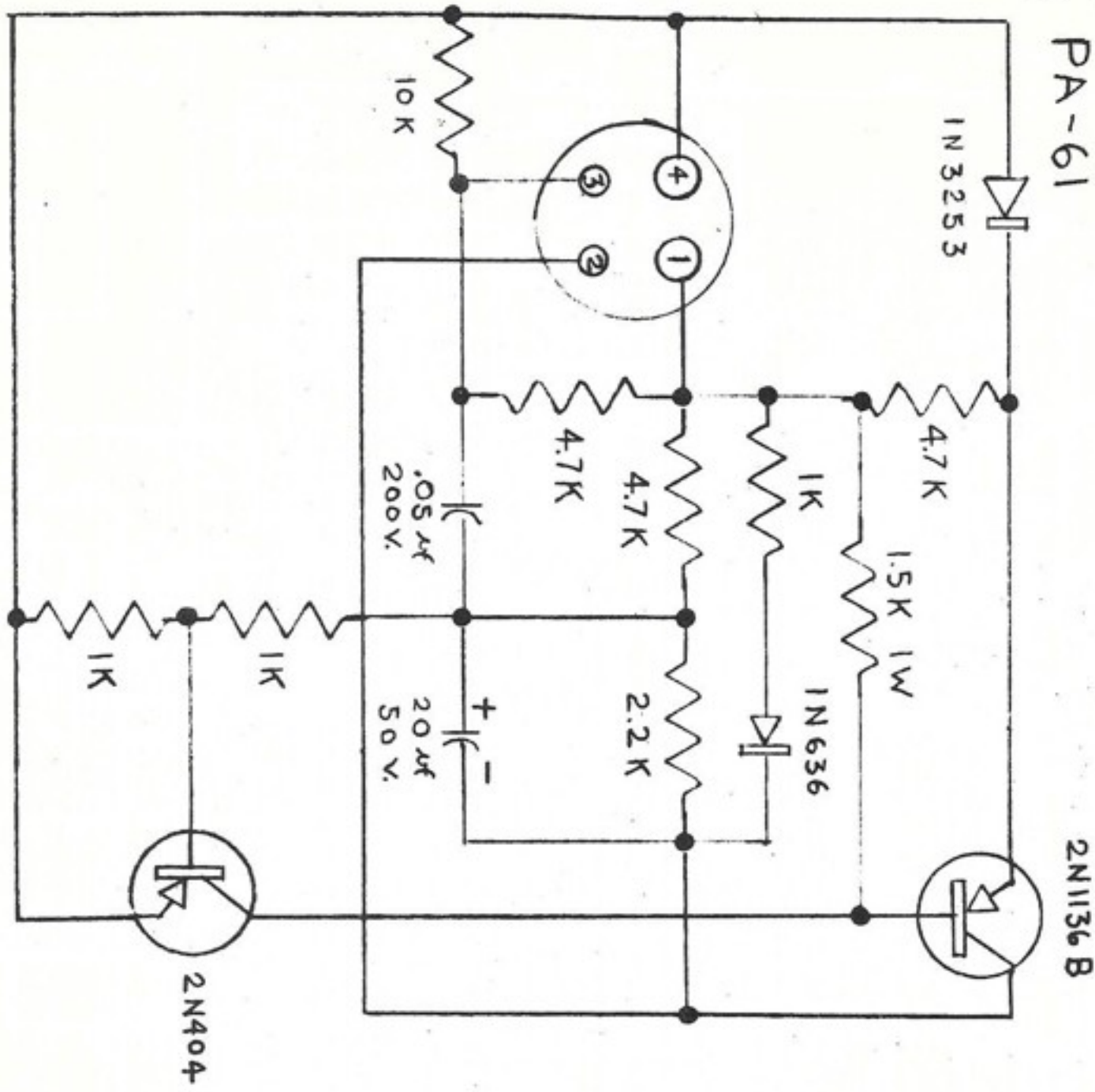
Keep side plates clean, dust free and polished.

Keep mirror finish on outer rim of side plate by buffing periodically.

Occasionally check rubber O rings on nylon drive rollers for excessive wear. Replace all four rubber rings as a set.

Keep machine covered with plastic dust cover when not in use.

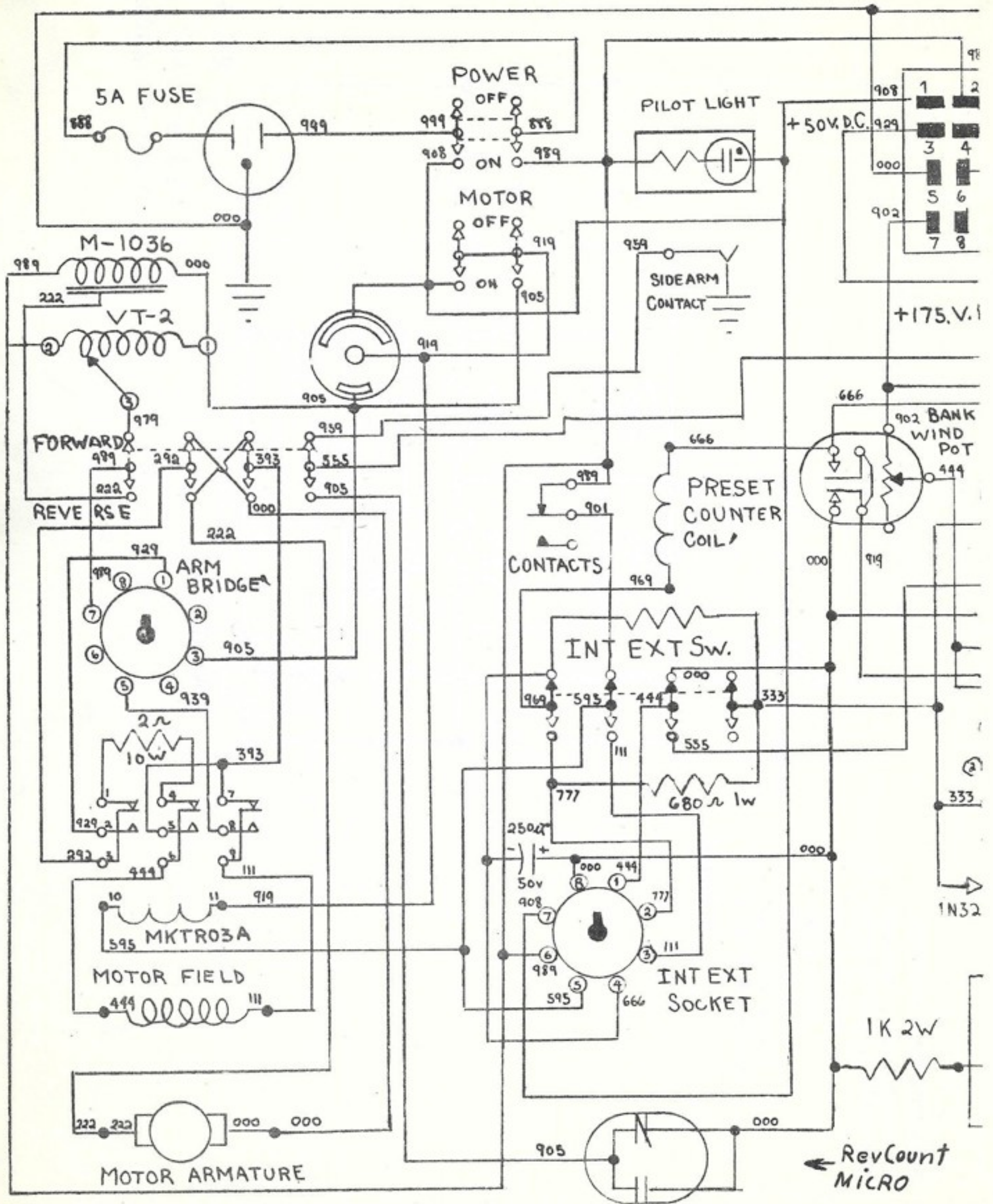
COIL-WINDER - MODEL - 700
 PLUG IN AMPLIFIER
 12-30-64-J-R PA-61



NOTES:

1. PLUG CONNECTIONS
 (1) - 30 V.D.C.
 (2) OUTPUT
 (3) INPUT
 (4) GROUND
2. EQUIVALENT TRANSISTORS
 MAY BE SUBSTITUTED IN
 PLACE OF THOSE INDICATED

GORMAN MACHINE CORP MODEL # 700



9 POWER SUPPLY
PLUG

903 - 50 V.D.C.

333 - 30 V.D.C.

100V

PA-63

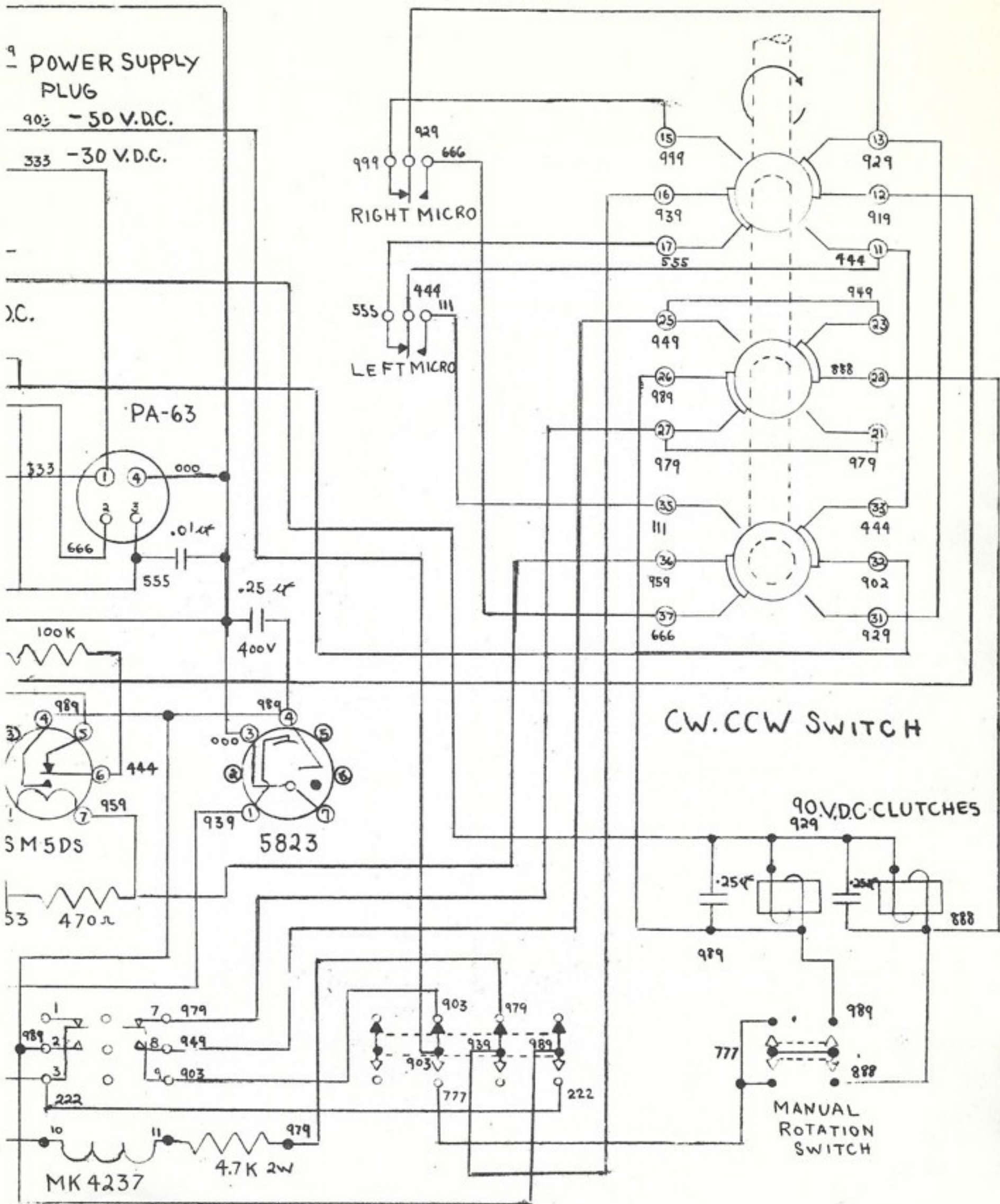
RIGHT MICRO

LEFT MICRO

CW.CCW SWITCH

90V.D.C. CLUTCHES

MANUAL
ROTATION
SWITCH



COIL-WINDER- MODEL-700

POWER SUPPLY

PP-64

I-5-65-JR

